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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: Summary of AlliedSignal's Response to July 12, 1994 CERCLA § 104(e) letter

DATE: 8-19-94

FROM: Joan Armstrong, Civil Investigator
PRP Search Section (3HW11)

TO: File

On August 5, 1994, AlliedSignal ("Allied") responded to EPA's follow-up 104(e) letter dated July 12, 1994. The 104(e) letter was a follow-up to a May 11, 1994, letter. Allied's June 10, 1994, response did not address the entire Site. It only addressed the portion of the Site currently owned by Hanlin.

Allied advised that it had no information in its files responsive to Questions 6,7, and 9 of the May 11 letter, however, it obtained information from Hanlin. Allied advised that it is providing the information to EPA in good faith and does not vouch for the accuracy or completeness of the information submitted.

Allied provided a narrative summary of the by-products and wasted produced through the operations of the plant now owned by Hanlin Chemicals. Also on this summary, Allied provided information on how such by-products and waste were disposed of. Instead of re-typing the information provided by Allied, please see Exhibit 1 which answers questions 6, 7, 9, and 10.

According to Allied, the information regarding any spills and/or releases was already provided to EPA in Allied's June 10, 1994, response (see Exhibit 2).

Regarding the portion of the Site now owned by Olin, Allied advised that it began operating at the "North Plant" on or shortly after 1953. The Plant was sold to Olin on or about October 26, 1981. Allied produced toluene diisocyanate aniline, methylene dianiline, fumeric acid, malic acid, maleic anhydrite, toluene dianiline acid and "possibly other substances including maleic acid." According to Allied detailed information and records were not available because they were transferred to Olin Corporation at the time of its purchase of the plant. Allied provided a copy of Exhibit G of the Agreement of Purchase and Sale between Allied and Olin for the North Plant. The document was dated August 4, 1981 (see Exhibit 3). This document

summarized (at the time of sale) violations, circumstances of non-compliance, citations, claims and complaints, wastes deposited on the real property, occupational health disclosures (provides information on exposure potentials of some chemicals used at the North Plant), safety and loss prevention disclosure, and product safety disclosure. Allied also provided the following well analytical results for the following time periods:

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- Third Quarter 1993
- Fourth Quarter 1993

Also provided were water table levels at the Site for 1993.

Allied provided copies of the following reports:

- SCD Environmental Audit Protocol and Report for both the North and South Plants, dated March 1977.
- Ground-Water Contamination at Allied Chemical Corporation, South Plant, dated September 19, 1977, prepared by Geraghty & Miller, Inc.
- Ground-Water Contamination at Allied Chemical Corporation, North Plant, dated May 1978, prepared by Geraghty & Miller, Inc.
- Ground-Water Flow Patterns from 1978 to 1986 on Allied-Signal, Inc., LCP Chemicals-West Virginia, Inc., and Olin Corporation Sites, dated April 1987, prepared by Geraghty & Miller, Inc.
- Evaluation of the Ground-Water Monitoring and Containment System at the Allied, Hanlin, Olin Sites, dated January 1991, prepared by Geraghty & Miller, Inc.

Attachments

cc: C. Valente (3RC33)
D. Iacono (3HW41)
C. Wagner (3HW33)

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EXHIBIT 1

QUESTION 6 - BY-PRODUCTS AND WASTES PRODUCED THROUGH THE OPERATIONS

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A. Chlorinated Still Bottoms - This liquid material was the heavy ends from the carbon tetrachloride distillation column. Approximately 3,000 gallons/month were generated. Chemical composition follows:

carbon tetrachloride	1.0
trichloroethylene	10.0
trichloroethane	32.0
tetrachloroethylene	11.0
tetrachloroethane	28.0
pentachloroethane	18.0
HCl	0.8

B. CMP Sludge - This solid material was generated during cleaning of processing equipment in the chloromethane plant. Approximately 10,000 gallons/year were generated. Chemical composition follows:

sodium hydroxide	1.0
calcium carbonate	20.0
methylene chloride	14.0
chloroform	16.0
carbon tetrachloride	13.0
inert material/moisture	residual

C. CMP Spent Sulfuric Acid - This liquid material was generated in the chloromethane plant. Approximately 9,000 gallons/week were generated. Chemical composition follows:

sulfuric acid	70.0 - 75.0
dimethyl ether	0 - 7.1
methanol	0.6 - 1.0
methyl hydrogen sulfate	4.5 - 20.0
dimethyl sulfate	0 - 0.5
methylene chloride	0.1 - 0.3
chloroform	0.3 - 0.5
carbon tetrachloride	0.1 - 0.3
water	residual

D. Spent Dryer Residue - This solid material was a mixture of activated carbon and potassium carbonate contaminated with chlorinated organics. Approximately 16,000 gallons/year were generated in the chloromethane plant. Chemical composition follows:

methylene chloride	5.0
chloroform	4.0
carbon tetrachloride	1.0
potassium carbonate	50.0
activated carbon	40.0

E. BOD Distillate - This liquid material was the distillate from the distillation column in the wastewater treatment facility. Approximately 16,000 gallons/year were generated. An analyses is not available.

F. CMP Spent Lime - This solid material was generated from the neutralization of residual acidity in the methyl chloride operation. The spent lime contained methanol and small amounts of chlorinated hydrocarbons. A detailed analyses and the amount generated/year is not available.

G. CMP Spent Caustic - This liquid material was generated from the neutralization of residual chlorine and acidity in the chloromethanes product. The spent caustic contained sodium hypochlorite and trace amounts of chlorinated hydrocarbons. A detailed analyses and the amount generated/year is not available.

H. Wastewater Treatment Sludge - This solid material was generated in the treatment of mercury contaminated waste streams from the chlorine/caustic soda operation. An estimated 230 tons/year were generated. Chemical composition follows:

moisture	50.0
metallic carbonates/hydroxides	< 1.0
metallic sulfides	< 1.0
metallic sulfates	1.0
filter aid	balance

I. Brine Purification Muds - This solid material was generated during the removal of impurities in the raw brine from the solution mining of salt. The material consisted mostly of calcium and magnesium carbonates and hydroxides. Approximately 2,400 tons/year were generated. A detailed analyses is not available.

J. Chlorinated Spent Lime - This solid material was generated during the scrubbing of waste chlorine gas with a calcium hydroxide solution. The waste contained approximately 10% calcium hypochlorite. About 2,500 tons/year were generated.

K. Asbestos - Asbestos containing materials from various renovations were buried on-site. The material was packed in polyethylene bags. The amount is unknown.

L. Hydrochloric Acid - The liquid by-product hydrochloric acid from the chloromethanes operation was disposed of on-site occasionally when there were no sales for the material. The 31% acid contained trace amounts of chlorinated hydrocarbons. There are no records for the amount disposed of on-site.

M. Chlor/Alkali Spent Sulfuric Acid - This liquid material was generated in the chlor/alkali plant from the drying of product chlorine gas. Approximately 3,000 gallons/week were generated. The strength of the spent acid was 70% and it contained trace amounts of free chlorine. This material was shipped off-site (sold).

N. Fly Ash and Cinders - Bottom ash from four coal-fired boilers was normally disposed of off-site. On occasion, bottom ash was used on-site for roads and trash dump cover. Fly ash was disposed of on-site and was also used to cover trash dumps. Approximately 26 tons/day of these materials were generated. In December, 1979 the bottom ash and fly ash were analyzed by the then proposed U. S. EPA RCRA extraction procedure. Additionally, the leachates were analyzed for all 129 priority pollutants. The analytical results of the RCRA extraction method indicated that the bottom ash and fly ash would not be considered hazardous from a toxicity point of view per the proposed RCRA regulations. In addition, all organic priority pollutants were below the detection limits. See attached table XI for analyses.

O. Trash and Refuse - In addition to general plant trash, other materials including spent graphite from the mercury cells, ceramic packing from various vessels such as chlorine lime scrubbers and chloromethane reactors, insulation possibly containing asbestos, small quantities of laboratory chemicals and samples and CMP spent dryer residue were buried on-site.

P. Vinyl Chloride Plant Chemicals - A list of chemicals used in the vinyl chloride operation follows:

Calcium Chloride
Sulfuric Acid
Potassium Hydroxide
Sodium Hydroxide
Phenol
Acetaldehyde
Sodium Bisulfite
~~Arochlor~~ Aroclor
Mercuric chloride impregnated carbon catalyst
Heat transfer fluid

Other than the catalyst and heat transfer fluid, no record of the disposition of these materials could be found. The catalyst and heat transfer fluid were shipped off-site. The vinyl chloride plant was dismantled in 1967.

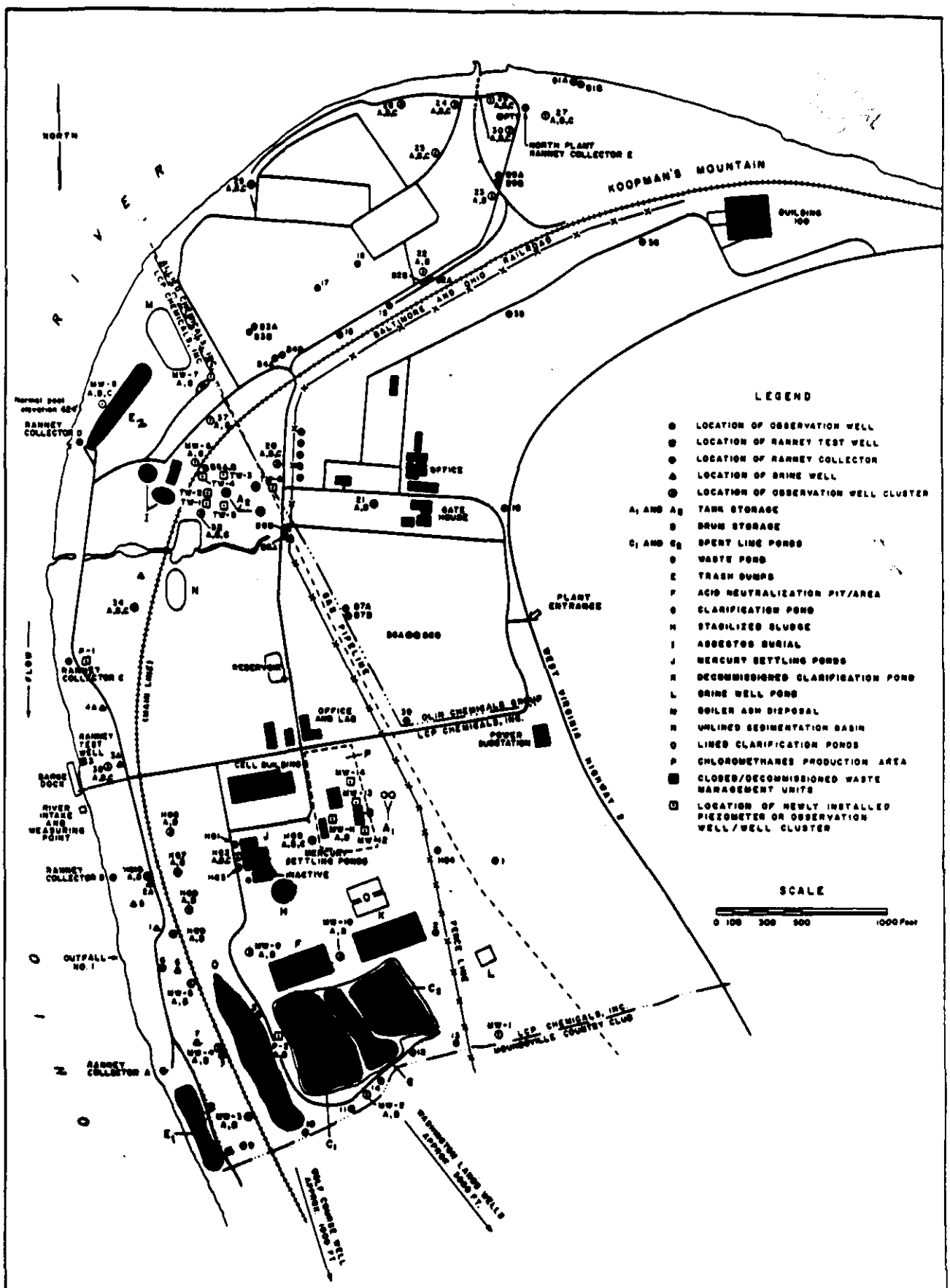

FIGURE 3.6

LOCATION OF WASTE MANAGEMENT UNITS

LCP CHEMICALS-WEST VIRGINIA, INC.
MOUNDSVILLE, WEST VIRGINIA

TABLE XI

ALLIED CHEMICAL CORPORATION - MOUNDSVILLE, W. VA. - SOUTH PLANT
RCRA EXTRACTION - LEACHATE ANALYSIS AND SOLIDS ANALYSIS

Parameter	Fly Ash As Received (Ashed) mg/g	Fly Ash RCRA Distilled Water Leachate mg/l	Bottom Ash As Received (Ashed) mg/g	Bottom Ash RCRA Distilled Water Leachate mg/l	Bottom Ash RCRA AcOH Leachate mg/l
Ba	0.022	0.39	0.007	0.053	0.140
Be	0.004	0.020	<0.001	<0.001	0.002
Cd	0.001	0.039	<0.001	0.005	0.007
Cr	0.055	0.030	0.012	0.025	0.030
Cu	0.045	0.480	0.006	0.020	0.040
Ni	0.124	1.23	0.006	0.080	0.605
Pb	0.034	0.270	0.004	0.050	0.075
Zn	0.107	4.14	0.005	0.018	0.146
Ag	<0.001	<0.001	<0.001	<0.001	<0.001
As	0.153	0.098	0.002	0.015	0.009
Se	0.002	0.057	<0.001	0.018	0.018
Hg	<0.0002	0.0022	<0.0001	0.0001	0.0002
Tl	<0.001	0.009	<0.001	<0.001	<0.001
Sb	0.001	0.018	<0.001	<0.001	<0.001
Pd	0.002	0.010	<0.001	0.001	0.003
Endrin	NA	<1 ppb	NA	<1 ppb	<1 ppb
Lindane	NA	<10 ppb	NA	<10 ppb	<10 ppb
Methoxychlor	NA	<10 ppb	NA	<10 ppb	<10 ppb
Toxaphene	NA	<10 ppb	NA	<10 ppb	<10 ppb
2, 4 D	NA	<10 ppb	NA	<10 ppb	<10 ppb
2, 4, 5-TP	NA	<10 ppb	NA	<10 ppb	<10 ppb

NA - Not Applicable

QUESTION 7 - DISPOSAL/TREATMENT METHODS

The methods used to dispose of or treat each such substance, by-product and waste described in A through O of Question 7 above follows:

A. Chlorinated Still Bottoms - From 1954-1973 this material was dumped to an open ditch which discharged to an unlined basin known as the acid neutralization area (F on attached Figure 36). The still bottoms were disposed of off-site after 1973.

B. CMP Sludge - This material was disposed of on-site in settling basins (C_1 and C_2 on Figure 36) until 1976. The sludge was disposed of off-site after 1976.

C. CMP Spent Sulfuric Acid - Until 1976 this material was disposed of in the acid neutralization area (F on Figure 36). The spent acid was disposed of off-site after 1976.

D. Spent Dryer Residue - Until 1980 this material was disposed of on-site in trash dumps (E_1 and E_2 on Figure 36). Disposal was off-site after 1980.

E. BOD Distillate - This material was never disposed of on-site.

F. CMP Spent Lime - Until 1978 this material was disposed of on-site in settling basins (C_1 and C_2 on Figure 36). The use of lime in the methyl chloride operation was discontinued in 1978.

G. CMP Spent Caustic - Until 1978 this material was disposed of on-site in settling basins C_1 and C_2 and the acid neutralization area, F. After 1978 the CMP spent caustic was treated on-site (distillation/neutralization).

H. Wastewater Treatment Sludge - This material was disposed of on-site (G, H and J on Figure 36).

I. Brine Purification Muds - This non-hazardous material was disposed of on-site in settling basins (C_1, C_2, D and K on Figure 36).

J. Chlorinated Spent Lime - This material was disposed of on-site in settling basins (C_1, C_2, D and K on Figure 36).

K. Asbestos - This material was buried on-site (E_1, E_2 and I on Figure 36).

L. Hydrochloric Acid - When there were no sales, Pond 1 (D on Figure 36) was utilized for the disposal of this acid for a period of approximately 5 years.

M. Chlor/Alkali Spent Sulfuric Acid - This material was sold.

N. Fly Ash and Cinders - On-site disposal was at M and N on Figure 36.

O. Trash and Refuse - E_1 and E_2 on Figure 36. The on-site disposal of this material was discontinued in early 1980.

For those disposal locations which were closed, a description of methods, procedures, plans, etc. that were followed follows:

ACID NEUTRALIZATION AREA (F ON FIGURE 36)

In 1977 the acid neutralization pit was filled with clean soil. In 1981 the acid neutralization area was used as a work facility for stabilizing mercury-containing sludges dredged from unit G. The material dredged from unit G was mixed with "Chem-Fix", a chemical stabilizer consisting of cement, silicate, and sodium sulfide to form a stabilized sludge. The stabilized sludge was removed from the acid neutralization pit and placed back into the storage pond G as fill material during closure procedures. Final closure of the acid neutralization area occurred in 1982, when a 12 inch thick natural clay cap and covering of seeded topsoil was placed over the area.

SETTLING BASINS (C_1, C_2 AND G ON FIGURE 36)

Solid waste management units C_1, C_2 and G were closed in 1982. Prior to closure, the surface water in units C_1 and C_2 was drained and treated. Mercury containing sludges in Unit G were excavated and chemically fixed, then placed back into unit G as fill. Units C_1, C_2, and G were closed as one unit under a common cap. Final closure included adding fill and regrading, capping the units with 12 inches of clay, adding a topsoil layer, grading for drainage, and seeding. The boundaries of individual units cannot be distinguished from the ground surface.

TRASH DUMPS (E_1 AND E_2 ON FIGURE 36)

The trash dumps were closed in 1982. Closure consisted of filling to grade with soil fill and boiler ash, placing and compacting 12 inches of clay over the fill, covering the areas with topsoil, grading for drainage, and seeding with grass. These areas are currently maintained as a grassed field with restricted access.

STABILIZED SLUDGE AREA (H ON FIGURE 36)

In 1977 mercury-containing sludge was excavated from a former mercury settling pond and stabilized with Portland cement prior to placement into a lined (30 to 40 mil PVC), 110 foot by 210 foot excavation. The excavation was subsequently covered with a PVC liner, and capped with clean soil. The contribution of this unit to existing groundwater contamination is believed to be insignificant.

MERCURY SETTLING BASINS (J ON FIGURE 36)

Five EPDM-lined (1/16 inch-thick liner) ponds were used in the WV/NPDES treatment system for mercury-containing wastewaters generated in the chlor/alkali production area. Wastewaters were treated by pH adjustment and sulfide addition, which resulted in the transformation of mercury in the wastewater stream from mercuric chloride to a precipitated mercury sulfide. These ponds were in service from 1977 until 1986, when the units were found to be leaking and were subsequently closed by Hanlin. Closure activities included the in-place stabilization of residual sludge in the ponds with Portland cement and fly ash, and the installation of a modified "RCRA" cap consisting of a one-foot layer of compacted clay, a 40 mil synthetic liner, a one-foot sand drainage layer and a one-foot layer of topsoil.

SETTLING BASIN (D ON FIGURE 36)

In 1982 pond D was closed by draining and covering the surface with a 12 inch layer of compacted clay and 6 inches of topsoil.

QUESTION 9 - ASSESSMENTS/INVESTIGATIONS

The following investigations have been performed at the site by Geraghty & Miller, Inc. for Allied.

1. In 1977, an investigation was conducted to evaluate the nature and extent of contamination beneath the South plant (Hanlin area) of the plant. Findings from this study indicated that groundwater quality had been affected by plant-related contamination.

2. In 1978, a similar type investigation was conducted at the North plant (Allied/Olin area).

3. In 1986 the groundwater flow patterns at the Allied/Hanlin/Olin Site were reevaluated. The study concluded that the pumping program at the Site was successfully preventing groundwater contaminants from migrating off-site.

   Copies of these three investigations have already been provided to U. S. EPA Region III.

4. In 1990 an evaluation was conducted of the existing groundwater monitoring well network and the containment system. A copy of the Executive Summary from the evaluation is attached.

EVALUATION OF THE GROUND-WATER MONITORING AND CONTAINMENT SYSTEM AT THE ALLIED-SIGNAL, INC. HANLIN CHEMICALS-WEST VIRGINIA, INC., AND OLIN CORPORATION, INC. SITES MOUNDSVILLE, WEST VIRGINIA

EXECUTIVE SUMMARY

During October and November of 1990, Geraghty & Miller performed an evaluation of the ground-water monitoring and containment system at Allied-Signal's former Moundsville facility. The principal findings of this investigation are outlined below and discussed in the following report.

- Measuring-point elevations on existing two-inch diameter wells at Allied Park were re-surveyed by Stegman and Schellhase, Inc. during the evaluation. Well-head elevations measured on January 1982 and October 1990 are generally comparable. Differences in well-head elevations between the October 1990 and May 1978 surveys is attributed to the addition to or removal of well casing to adjust final well height.

- The ground-water elevation data collected on October 1, 1990 indicate that, at current pumping rates, Ranney Wells A, D, and E are preventing the off-site migration of ground water from beneath the Allied-Signal, Hanlin Chemicals, and Olin Corporation sites. These findings concur with past evaluations documented for the ground-water system and a recently-created ground-water flow model prepared by Geraghty & Miller.

- Allied's existing ground-water monitoring network appears to be capable of providing representative water-quality data for the former, remediated formaldehyde pond and blackwater pond, and the former chemical trash dump, despite minor shifts in ground-water flow and damage to monitoring wells 29A and 26B.

- Water-quality data collected from monitoring wells 29A and 29B were found to be generally comparable. Consequently, well 29B could be proposed as a replacement for damaged well 29A.

- Of the existing wells originally designated for monitoring the former formaldehyde pond and former blackwater pond, wells 25A, B, and C remain optimally situated for the monitoring of ground-water quality alterations. These wells also monitor the encapsulated residuals area located within the former blackwater pond.

- Well clusters 23 and 30 are not situated to provide source-specific water-quality data for the former, remediated solid Waste Management Units. Allied may want to consider dropping these wells from the monitoring network.

EXHIBIT 2

Exhibit G

To The May 27, 1981 Agreement of Purchase and Sale Between

Allied Corporation & Olin Corporation for the Moundsville North Plant

8/4/81

EXHIBIT G

To Agreement of Purchase and Sale Between Allied Corporation and Olin Corporation
Dated as of May 27, 1981

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A. The violations, circumstances of non-compliance, citations, claims and complaints, referred to in paragraphs 2.01(f), (h), and (i) of the Agreement, are:

1.* Seller normally discharges approximately 33,000 gallons/day of sanitary waste into the equalization pond of the plant's waste treatment system under existing WRD permit No. IW-5989-78. Seller believes sanitary sewer lines from Building 51 and Building 60 may be broken. The discharge may be considered by the state to be an unpermitted discharge to the groundwater in violation of State Permit No. IW-5989-78.

On June 15, 1981 Seller informed the WRD that these sewer lines may be broken. WRD did not indicate that any action would be taken. Seller was advised in a subsequent telephone conversation with WRD that a permit modification was not necessary to install new lines directing sanitary wastes into the industrial waste sewer system, abandoning the septic tank and broken lines. This was confirmed by letter from Seller to WRD on July 6, 1981. Such new lines should eliminate any leaks. Seller's repair work is in progress.

2. From January 17, 1975 to May 15, 1981, Seller reported a total of 122 excursions from the NPDES permit limits. These were reported in writing to the EPA and WRD as required by the conditions of the permit. A summary table of the excursions and actions taken by enforcement authorities with respect thereto are set forth in Attachment 1.

3. From January 1, 1975 to April 23, 1980, there have been 6 abnormal effluent discharges not specifically covered by permit limits. These discharges were reported to the EPA and/or WRD. A summary of these discharges and actions taken by enforcement authorities with respect thereto are set forth in Attachment 2.

*Contains information updated after May 27, 1981.

4. The January 1981 NPDES inspection by the EPA showed the USEPA mortality bioassay results to be higher than Allied's contract laboratory bioassay results. The reason for the discrepancy is believed to be fish sensitivity and lag time in performing analysis. We believe that there is no potential for violation of the NPDES permit arising from this inspection. See C.1.

5. The carbon regeneration furnace has been used since May 1977 for regenerating carbon used to treat waste including wastes from toluenediamine, methylene dianiline and dinitrotoluene operations. On April 3, 1979 Seller notified the WVAPCC that the particulate emissions were out of compliance with West Virginia Air Pollution Control Commission Regulation VII. The actual emissions exceeded those indicated in the carbon regeneration furnaces registration (11.5 lbs./hr. v 3.4 lbs./hr.). Seller installed an after burner on the carbon furnace which reduced emissions. Thereafter, emission sampling became impractical. Seller subsequently submitted a letter on April 24, 1980 to the WVAPCC advising of the impracticality of sampling but indicating there were currently no visible emissions (zero opacity). There has been no response from the WVAPCC to the letter. Except for one power failure the after burner has controlled visible emissions to zero opacity since its installation.

6. On April 21, 1977, the WVAPCC issued Seller a Notice of Violation for opacity of the sulfuric acid concentrator stack. Opacity exceeded WVAPCC Regulation VII, Chapter 16, Art. 20, W.Va. Code §3, with a reading greater than that designated as No. 1 on the Ringelmann Smoke Chart for 30 minutes. After meeting and discussing the matter with the agency on June 17, 1977, it was agreed that excessive opacity was caused by mononitrotoluene and dinitrotoluene in the emissions. - This was based on an emissions study by Tradet Laboratories, Inc., under contract to the Seller; a maintenance program to control the opacity problem was implemented but compliance was not achieved 100% of the time. On May 21, 1980, the WVAPCC issued Seller a Notice of Violation for opacity of the SAC stack. Opacity exceeded WVAPCC Regulation VII, Chapter 16, Art. 20, W.Va. Code S3, with opacity in excess of that designated as No. 2 on the Ringelmann Smoke Chart or its equivalent for more than five minutes in any 60 minute period. Subsequent changes in operations reduced the opacity so that it is generally within state limits. Seller is installing a scrubber to assure compliance with opacity standards.

7.* Seller was advised by phone on May 20, 1981, that the State of West Virginia is considering action against Allied for unpermitted discharges to groundwater. Seller met with the WV Assistant Attorney General on June 3, 1981 and advised the State that Seller believed it has complied with the appropriate regulations and had given ample notification of groundwater contamination to the State. Seller was advised that the State would review its files and notify Seller if any action was forthcoming.

On July 9, 1981, the State of West Virginia informed Seller that the possible action could be based upon either permit violations or the presence of pollution in the groundwater.

It is possible that in resolution of this potential enforcement action an order would be issued with the following requirements:

a) Monetary penalty.

b) Continued pumping of Ranney Well E.

c) A contingency plan in the event of failure of Ranney Well E.

d) A groundwater monitoring program probably using existing wells.

e) Remedial action possibly including capping of areas such as buried salts (B4), aniline area (B6), and other areas.

8.* Potential air action by USEPA/State of Pennsylvania - Emissions at the North plant. See Exhibit F, Schedule F, Potential Claims (3) for description.

B. The disclosure of wastes deposited on the real property, referred to in paragraph 2.01(f) and (i) of the Agreement, is as follows:

1. Pond 17 (Active) "NPDES Equalization Pond" - This is an EPDM rubber lined holding basin in operation since July 1977 that is utilized to collect and equalize the North Plant process waste water prior to neutralization. Location-Pond 17 on Attachment 3. The effluent from this pond is pumped to the inorganic waste treatment plant for pH adjustment using lime or caustic. During the start-up of the NPDES water treatment facilities in 1977, a major leak was discovered at the inlet sewer line to the pond. After completion of substantial repairs, a small amount of leakage of undetermined origin was still detectable in the pond's underdrain sump. However, since the pond is constructed with a compacted clay base beneath the synthetic liner, it is not probable that material would get into groundwaters. The liner was replaced in May 1981. The volume of this pond is approximately 2 million gallons.

2. Pond 18 (Active) "NPDES Settling Pond" - This EPDM rubber lined pond in operation since July 1977 is utilized to settle and equalize neutralized process waste water after it is pumped through the inorganic waste treatment plant. Location-Pond 18 in Attachment 3. The inlet pH is normally maintained at 8+ to enhance settling of metallic hydroxides. The volume of this pond is approximately 2 million gallons. The effluent from this pond overflows to the Outfall 003 discharge line to the Ohio River.

3. Buried Salts - Approximately 30,000 pounds of sodium and potassium nitrate/nitrite from an old maleic acid anhydride converter is buried in bulk in an area between Building 41 and the boiler house. Location-Buried Salts in Attachment 3.

4. Mercury - Hydrogen is received from the Moundsville South Plant via pipeline. Trace amounts of mercury in the hydrogen are removed by means of carbon adsorption and molecular sieve units and the area around these units may be contaminated with minor amounts of mercury. Location-Mercury Removal Unit in Attachment 3.

5. Aniline Area - The ground in the area, approximately 50,000 square feet, formerly used to manufacture aniline, would be expected to be contaminated with nitrobenzenes, aniline, benzene and minor amounts of mercury. These were used in the manufacture of aniline. Location-area formerly used to manufacture aniline in Attachment 3.

6. Dinitrotoluene Drums - Approximately 500 dinitrotoluene (DNT) drums located in a 5000 square feet area North of Building 46 were melted and returned to process. Until April 1980, the DNT drums were stored in a 16,000 square feet area on "Koopman's Mountain." Location-Former DNT Barrel Storage in Attachment 3. The earth under the Building 46 DNT drum storage area and Koopman's Mountain may be contaminated with DNT.

7. Buried DNT Contaminated Soil - Approximately 12,000 cubic feet of DNT contaminated soil is buried in a polyethylene lined pit near the TDI residue pile. It is believed that the material will be on Seller's property. However, a small portion may be on Olin property depending upon final property lines.

8. DCB/CCl_4 Waste Stream - There is a backlog of approximately 10,000 gallons of this DCB/CCl_4 waste stream stored in tanks. Approximately 5000 square feet of earthen floor within a diked area may be contaminated with monochlorobenzene from previous operations and with DCB and CCl_4. Location-DCB/CCl_4 Storage Tanks in Attachment 3. The material has been sent off-site in the past for recovery of the DCB.

9. Aniline Burn Area - For approximately one month, aniline residue was burned in a 150 square feet open pit north of Ranney Well "E." The area may be contaminated with aniline and/or residue decomposition products. Location-Aniline Residue Burning Pits in Attachment 3.

10. Monochlorobenzene - An area of approximately 3400 square feet near Building 63 may be contaminated with monochlorobenzene due to previous storage and handling of this material for the manufacture of TDI.

11. Other Residues and Locations - The groundwater at the site is contaminated with organic and inorganic compounds due to past handling and disposal practices, spills, leaks, faulty ponds, and the like. For similar reasons, there may be sections of ground contaminated by materials handled at the plant.

    In addition to the above-mentioned materials on Seller's premises, tanks, sewers, lines, sumps, equipment, transport and other facilities may contain chemical residues.

C. Material communications, correspondence, submissions to government agencies and other items related to the environmental status of the Plant and Plant Site, and environmental matters resulting from activities associated with the Plant and the Plant Site referred to in paragraph 2.01(h) and (i) of the Agreement, are:

1. As a result of a meeting with EPA on September 28, 1978, Seller submitted on October 27, 1978 a course of action in regard to the results of bioassay tests run by the EPA on outfall 003.

   On August 20, 1979 Seller submitted to the EPA the results of a program to determine the effects of known constituents of outfall 003 on the results of static bioassay tests.

   On November 30, 1979 Seller received a Section 308 request from the EPA concerning the results of bioassay tests. The response was submitted to the EPA on January 30, 1980.

   On March 12, 1980 Seller received a letter from the EPA stating that the results of the bioassay tests do not presently warrant a toxicity reduction plan, especially in light of the fact that BAT guidelines are about to be promulgated. Also, the EPA requested notification of completion of the projects instituted to reduce toxicity at outfall 003. On July 17, 1980 Seller notified the EPA that a portion of the project was completed and the rest under evaluation.

   On March 28, 1980 Seller notified the EPA by letter of incorrect references in their letter of March 12, 1980.

2. On September 24, 1980 Seller received standard samples from USEPA for analysis of certain parameters to check the plant's analytical methods. Seller transmitted results of its analyses to USEPA on October 22, 1980 and was advised by USEPA on April 13, 1981 that mercury, pH and nitrate nitrogen reported values were not within acceptable analytical limits. Seller advised USEPA on May 18, 1981 that the pH value was due to decimal error and that nitrogen and mercury levels would be rechecked. Seller's studies show no further problems with nitrogen values. However, mercury values, received from an outside laboratory, are still in error. USEPA will be advised that Seller will utilize another contract laboratory for mercury analysis.

3. Seller notified the EPA by letter of April 21, 1976 of its intent to burn waste hydrogen in SG-1. Seller also advised EPA that the hydrogen was treated to remove mercury.

4. Seller contact the WVAPCC (by telephone) on February 22, 1980 and obtained permission to burn waste toluene diamines (TDA) in steam boiler SG-3. By letter of March 6, 1980 to the WVAPCC, Seller confirmed the telephone report of February 22, 1980.

5. Registration Data of Manufacturing Process Source Operations Which Emit Hydrocarbons and/or Nitrogen Oxides was submitted to WVAPCC July 20, 1977.

6. Registration data for incinerators and particulate/sulfur dioxide sources were submitted to WVAPCC July 5, 1978. On April 23, 1981 Seller met with WVAPCC to discuss updating registration of emission sources. The agency advised that Seller should wait until new forms are issued. Seller was also advised by WVAPCC that there are no air operating permits for emission sources and that Buyer would have to resubmit registrations in Buyer's name.

7. On March 26, 1981 the WVAPCC advised Seller by phone that a construction permit to install a scrubber on the sulfuric acid concentrator unit to reduce emissions was not required. This was confirmed in writing to WVAPCC on April 24, 1981.

8. Seller has participated in various surveys conducted by EPA. These include response to a November 1, 1973 EPA request for information on plant emissions of sulfur oxides and particulates and a 1978 Hydroscience study on Emission Control Options for the Synthetic Organic Chemicals Manufacturing Industry. A report for Seller's TDI process was subsequently issued. In 1979 a similar report was issued on the TDI industry. A response was submitted to EPA's April 27, 1979 request for informaton on emissions from the SAC.

9. On April 4, 1980, Inside EPA reported on an EPA contractor Systems Application, Inc. (SAI) report assessing emissions from 35 possible airborne carcinogens. It lists Seller's Moundsville location as number five in the country in terms of dosage to the potentially exposed population. Seller found that the o-dichlorobenzene (o-DCB) dosage was incorrectly determined. USEPA published the report for public comment but did not correct for Seller's comments. Seller submitted comments to USEPA on June 16, 1980.

10. WVAPCC advised Seller on April 28, 1981 that a permit was not required for the installation of a new ventilation system in the DNT process building.

11. In response to a request from the United States House of Representatives, Committee on Interstate Commerce, Subcommittee on Oversights and Investigations, on June 29, 1979 Seller forwarded to Congressman Eckhardt, the subcommittee chairman, completed survey questionnaires concerning solid waste disposal practices.

12. On March 8, 1977 Seller submitted to West Virginia Department of Health a completed Hazardous Waste Survey form as requested.

13. On October 12, 1978 Seller submitted to the WVDNR a list of impoundments, ponds and lagoons at the North Plant.

14. By letter dated January 23, 1981, USEPA requested information on solid wastes produced in the manufacture of TDI. Seller responded to USEPA's request on March 6, 1981.

15. In November, 1977, Seller hired Geraghty & Miller, Inc. to perform a hydrogeological study of the North Plant. The North Plant report was submitted to Seller in May, 1978, and includes recommendations relating to the South Plant. The federal and state agencies have been made aware of the groundwater contamination situation through the NPDES and WRD permit applications. Also, well water quality data are submitted to the WRD as an integral part of the monthly monitoring report.

    The Geraghty & Miller Study concluded that the trash dump west of Ranney Well E is apparently the source for most of the organic contaminants arriving at Ranney Collector E, while most of the inorganic pollutants appear to originate in the NAD pond and TDI residue pile areas. Geraghty & Miller further concluded that contaminated groundwater is not migrating off the plant property and that neighboring wells and the Ohio River do not appear to be in danger of becoming polluted as long as Ranney Well E is pumped at an appropriate rate.

    In the past, it has been necessary for Seller on occasion to pump out a separate organic phase which accumulated in the bottom of Ranney Well E. This, however, has not been required since July 27, 1978, indicating a reduction in separable organics.

    Geraghty & Miller recommended abandonment and impermeable covering of unlined facilities as soon as practicable. They further recommended continued

pumping of the Ranney Collectors, a water quality and water level monitoring program and flood protection for waste disposal facilities. Seller submitted the Geraghty & Miller reports for the North and South Plants to the West Virginia Division of Water Resources on March 28, 1980. See A.8.

16. On August 1, 1980 Seller submitted Notification of Hazardous Waste Activity to USEPA as required by RCRA.

17. On November 4, 1980 Seller submitted RCRA Permit Application Part A, Forms 1 and 3 to USEPA.

18. On January 16, 1981, Seller submitted a subsequent Notification of Hazardous Waste Activity to USEPA to include TDI residue as required by RCRA.

19. On May 6, 1981 Seller submitted an amended Part A application to USEPA to include TDI residue.

20.* Seller operated under West Virginia State Water Commission Industrial Permit Numbers 53, 1061, 3060, 3205, 4249, 5726 from July 8, 1955 until June 15, 1978. Seller is presently operating under Permit No. IW-5989-78 issued May 17, 1978. Permit expires January 17, 1980. The Reissuance Application (No. IR-88) was submitted to WRD on September 18, 1979. On January 26, 1981 the WRD advised the Seller that Reissuance Application No. IR-88 was complete and that a public notice relating to the application had been issued.

By letters dated August 18, 1980, October 6, 1980, April 23, 1981, April 29, 1981 and May 29, 1981, WRD extended the existing permit to October 31, 1980, April 1, 1980, May 1, 1981, June 1, 1981, and July 17, 1981. On February 19, 1981 Seller sent to the WRD an amendment to the State Water Control Permit No. IW-5989-78 and Reissuance Application IR-88 concerning the shared monitoring of outfall 002 with LCP-West Virginia, Inc. By letter dated May 29, 1981, WVDNR requested various information on pond No. 16 discharges to outfall 004. Seller submitted response to WRD on June 12, 1981.

21. Seller submitted an application to renew NPDES Permit No. WV0004413 on July 6, 1979. Seller's NPDES Permit No. WV0004413 expired January 1980. The EPA issued a letter dated January 17, 1980 advising Seller that, pending issuance of a new permit, the existing permit will continue. On March 18, 1981,Seller submitted an NPDES application on the consolidated forms 1 and 2C, to EPA. Issuance of the permit is pending before Region III.

22. Seller's SPCC Plan was revised in January 1980, to conform with the sequence outlined in the "Guidelines for the Preparation of An SPCC Plan" (USEPA regulation 40 CFR 112.7). The Plan reflects both the Seller's North and former South Plants.

23. On June 14, 1977, EPA held a meeting with Seller in Philadelphia concerning CCl_4 discharges. As a result of that meeting, Seller submitted to the EPA on June 23, 1977 a plan and estimated schedule as to prevention and/or control of the CCl_4 spills. In furtherance of this program, Seller has instituted administrative controls. These sources have not contributed to any abnormal discharges or NPDES permit excursions since November 1977.

24. EPA and WVAPCC conducted inspections of the plant's emission permits in April 1976, July 1977 and August 1980. No apparent air pollution control problems were observed as a result of the inspections.

25. The Seller's electric transformers were sampled for PCB content on December 1, 1980. Results indicate two transformers, units 7 and 8, contain over 500 ppm of PCB's.

    The units are labeled in accordance with existing PCB regulations. Also, PCB was used in the phosgene manufacturing unit, Building 66, until September 1973 when it was removed from the equipment. The used material was burned in the plant incinerator. Analysis of water from the North Plant Ranney Well "E" and plant outfalls for the NPDES Permit Application submitted in July 1979 revealed no detectable PCB's.

26.* On June 8, 1981, Seller submitted Superfund Section 103(c) site notification to USEPA III.

27. Since 1974, Seller has experienced seven air incidents which were reported to the WVAPCC. These incidents included nitric acid tank car leaks, a TDA emission due to a rupture disc failure, phosgene releases, a refuse fire, and a TDI vapor release. No state action resulted from these incidents.

28. Routine inspections of outfalls and wastewater treatment facilitis are conducted monthly by a WRD inspector. The inspection reports are on file and available at the plant. The inspections generally cover visual inspection of outfalls and a cursory review of plant records. There are no outstanding actions.

    EPA compliance monitoring inspections in July 1976, March 1978, May 1979, and January 1981 generally showed the plant to be satisfactorily complying with the permit's recording and reporting procedure, facility operation and maintenance, sampling procedures, laboratory practices, flow measurements and effluent requirements.

MOUNDSVILLE NORTH PLANT

OCCUPATIONAL HEALTH DISCLOSURES

Exposure Summaries

Summarized below are exposure potentials and other information for some chemicals used at Moundsville in TDI and MDA production.

Chemicals Peculiar to TDI Production

36. Toluene Diisocyanate (TDI)

Personnel exposures to TDI at the plant have been documented since at least 1973. They typically show <.005 ppm in workroom air well below the OSHA allowable ceiling of 0.02 ppm and also below the NIOSH recommended TWA of 0.005 ppm (1973).

During the year 1979, the plant TDI process operated with 95 percent confidence level at 0.005 ppm or less. Excursions above the allowable standard, although infrequent, currently occur as a result of mechanical equipment failure such as pump seal leaks, accidental spills, and other unusual conditions. When these excursions occur, employees use respiratory protection to prevent overexposure.

37.* Toluenediamine (TDA)

Monitoring for TDA airborne concentrations has been ongoing since 1976. Currently, there is no OSHA standard for TDA.

Aware of toxicology information, Allied formed a committee (Plant, Division, and Corporate groups) which set an interal exposure guideline of 0.1 ppm or .5 mg/m^3.

The plant has advised potentially exposed employees of current toxicology information and of the results of employee monitoring.

On June 4-5, 1981, NIOSH conducted a Health Hazard Evaluation at Moundsville to study possible male reproductive effects of TDA and/or DNT. NIOSH's overall impression based on interview questionnaires suggested no excess miscarriages or other defects. A finished report, promised for early July 1981, will formalize conclusions.

A reproductive study was conducted at the plant the week of April 27, 1981 by the Chemical Industry Institute of Toxicology. Results are expected in the near future.

38. Dinitrotoluene (DNT)

Personnel samples have been taken at the plant to determine exposure levels to DNT. These levels are usually well below the OSHA TLV of 1.5 mg/m^3, but are occasionally above Seller's internal guideline of 1.0 mg/m^3.

39. Methylene Dianiline (MDA)

The plant produces MDA and has an industrial hygiene and a medical program to protect employees' health. Since beginning MDA production, there have not been any MDA health related problems at the Plant.

However, there have been documented cases of toxic effects on the liver from excessive exposure to MDA reported in the literature. As a result, Allied has revised its product literature and internal handling procedures.

40. Phosgene

The Plant produces phosgene as an intermediate for the TDI process. The current OSHA TLV for phosgene is 0.1 ppm. Both personal and continuous monitors, placed throughout the phosgene area, are used to ensure that employee exposure is within standard requirements. The MDA Scientific area monitors alert employees with an audible alarm in the control room should airborne phosgene levels exceed predetermined safe levels.

Since the Plant began producing phosgene in 1954 there has been one phosgene related fatality which occurred in 1978 due to an accidental release of phosgene. The incident was investigated by OSHA and is covered in the Safety and Loss Prevention disclosure. In addition to this fatality, there was one other serious phosgene exposure in which an employee developed lung edema and required follow-up medical treatment.

Other Materials

41. Formaldehyde

Short term detection tube samples recently showed non-detectable levels throughout the MDA Production area. More recently, a long term sample was taken in the MDA Building where formaldehyde is charged to the reactor. The result was well below the OSHA Standard. In addition long term samples were taken around the TDA treat tank at Pond #13 (settling), and at the TDA water storage tank in the environmental area. All were non-detectable except one (10 ppm) near the TDA treat tank. It was due to a feed line leak from the formaldehyde storage tank which has been repaired.

Trace amounts of formaldehyde were produced in the Pomalus operation which was shut down in 1979. Grab samples from 1/28/65-3/21/66 showed non-detectable levels for the most part with occasional peak levels around process tanks of up to 40 ppm.

42. Asbestos

The Plant has a long standing policy of not using asbestos unless absolutely necessary. The only exceptions now are the use of treated gasket material, which presents little or no hazards, and some transite pipe for the fire water systems.

Some older insulation may contain asbestos and the Plant has a special procedure which is used whenever that material must be removed.

Other OH Program Aspects

43. Respiratory Protection

The Plant has a comprehensive respiratory protection program that includes quantitative fit testing.

44. IH Protective Clothing

Protective clothing is provided to all hourly employees by agreement and to supervisors on an as needed basis. Separate lockers and in plant laundry service are also provided. Shower facilities outside of operating areas are provided to reduce chemical exposure potential.

45. Noise

In light of an 85 dBA/8 hour "action level" in OSHA's new Noise Amendment, the plant staff has updated noise level and exposure data. It suggests that significant noise exposure situations do not regularly occur though there are areas in the plant which regularly exceed 85 dBA.

46. On March 2, 1981 a Bill was introduced in the House of the W.Va. Legislature. This Bill, H.B. #1323 incorporates "establishment by the commissioner of labor of a list of hazardous chemicals substances to which employees of this state may be exposed." It also covers monitoring and posting of results under certain circumstances. It appears likely that the commissioner's list would include the OSHA 1910.1000 air contaminants list. It has been signed into law to be effective to July 1, 1981. Directives for its implementation must be written by the labor department. This may take at least 6 months.

SAFETY & LOSS PREVENTION DISCLOSURE

MOUNDSVILLE NORTH PLANT

47. OSHA Inspections

The facility was last inspected by OSHA on January 12, 197 following an employee fatality as a result of exposure to phosgene. The inspection resulted in the plant being cited for six violations relating to the respiratory protection program. A sum of Twenty Three Thousand Dollars in penalties was paid.

48. Automobile Overspray

During the period 1975 to present, approximately Ninety One Thousand Dollars were paid to settle overspray damage claims. Details of incidents and corrective actions taken are available at the plant site. There are no outstanding claims.

49. Fires and Explosions

The last fire incident causing over Fifty Thousand Dollars damage, or more than one day's production loss occurred on February 10, 1975 when the TDI plant solvent stripper caught fire. This incident resulted in damage to column trays and thirty days lost production. Corrective actions have been taken.

50. Power Outage

Since 1975, there has been only one total power failure that resulted in a production loss at the North Plant. This occurred on March 21, 1980 when a differential trip circuit on the North Plant main substation faulted, resulting in a loss of approximately five hours production.

Following the incident, faulty transformer wiring was replaced and the transformer controls were cleaned and silicone treated to prevent faults.

51. Workmen's Compensation

This Workmen's Compensation claim cost information was taken from the latest data available as of April 15, 1981 and covers the time period July 1, 1974 to July 1, 1980.

Total costs incurred during that period in handling still open cases are shown below:

Medical	$132,882
Indemnity	$279,679
Expense	$ 2,423
Total	$414,984

Reserve - $552,447

During the period July 1, 1974 to July 1, 1980, data available as of April 15, 1981 shows a total of fifty six claims closed at the total cost of eleven thousand five hundred thirty seven dollars.

ORIGINAL (Red)

PRODUCT SAFETY DISCLOSURE

52. Of the chemical products manufactured at Moundsville, Methylene Dianiline (MDA) is the only chemical known to be produced and sold in the U.S.A. solely by Allied Chemical. The other chemicals used on site should be familiar to Olin based on their experience in the manufacture of toluene diisocyanate Therefore, the following summary and the referenced information on MDA are submitted as the Product Safety Disclosures.

Methylene Dianiline (MDA)

There is no published TLV (1980) for MDA. However, an Airborne Exposure quideline of 0.1 ppm was proposed to ACGIH. MDA is a toxic chemical and can produce marked, severe effects on the liver. It is mildly irritating to skin and eyes, but can be readily absorbed through the skin to produce the above toxic response. MDA has been reported to be tumorgenic at relatively high dosages in laboratory animals but the data available are not adequate to reach a firm conclusion. No instances of cancer related to MDA have been reported in man despite extensive human experience, although there have been reports of liver toxicity in man overexposed to MDA.

53. As required, the chemicals manufactured at Moundsville were submitted to EPA under TSCA for inclusion in the inventory. This information is included in EPA's Toxic Substances Control Act Chemical Inventory - Initial Inventory (May 1979).

NONE OF MATTERS SET FORTH HEREIN IN ANY WAY AFFECT THE SCOPE OR EXTENT OF INDEMNIFICATIONS CONTAINED ELSEWHERE IN THE AGREEMENT.

ATTACHMENT 1

Moundsville North Works pH Excursion Chronology

NPDES Permit Effective Date: January 17, 1975

Note: From 1/17/75 to 9/30/75 pH measured on Outfalls 001, 002, and 003 via 24-hour composite sample.

pH Excursion Report No.	Report Date	Excursion Date	Outfall Involved	Length of Excursion	Measured pH	Permitted pH	Outfall Flow	Cause of Excursion
1	1/23/75	1/18/75	001	24 hours	12.3	1.0-12.0		Not known.
		1/19/75	001	24 hours	12.9	1.0-12.0		Not known.
		1/18/75	002	24 hours	0.7	1.0-12.0		Washing of sulfuric acid storage.
		1/19/75	002	24 hours	12.3	1.0-12.0		Overneutralization of low pH.
2	2/3/75	1/27/75	001	24 hours	12.3	1.0-12.0		Not known.
		1/29/75	002	24 hours	0.7	1.0-12.0		Leak in sulfuric acid pipe.
3	2/5/75	1/30/75	003	24 hours	12.1	1.0-12.0		Overneutralization.
		2/1/75	003	24 hours	12.3	1.0-12.0		Overneutralization.
4	2/10/75	2/4/75	001	24 hours	12.5	1.0-12.0		Not known.
		2/3/75	003	24 hours	12.8	1.0-12.0		Overneutraliztion.
		2/4/75	003	24 hours	12.7	1.0-12.0		Overneutralization.
		2/5/75	003	24 hours	12.2	1.0-12.0		Overneutralization.
5	2/14/75	2/9/75	002	24 hours	0.9	1.0-12.0		Sulfuric acid pump leak
6	2/19/75	2/13/75	003	24 hours	12.8	1.0-12.0		Overneutralization.
		2/14/75	003	24 hours	12.6	1.0-12.0		Overneutralization.
7	3/7/75	3/3/75	001	24 hours	12.1	1.0-12.0		Not known.
		3/5/75	001	24 hours	12.6	1.0-12.0		Not known.
		3/2/75	003	24 hours	0.1	1.0-12.0		Underneutralization.
		3/3/75	003	24 hours	0.1	1.0-12.0		Underneutralization.
		3/4/75	003	24 hours	0.7	1.0-12.0		Underneutralization.
8	3/14/75	3/7/75	003	24 hours	0.6	1.0-12.0		Underneutralization.
		3/8/75	003	24 hours	0.5	1.0-12.0		Underneutralization.
		3/9/75	003	24 hours	0.5	1.0-12.0		Underneutralization.
		3/11/75	003	24 hours	0.9	1.0-12.0		Underneutralization.
		3/12/75	003	24 hours	0.8	1.0-12.0		Underneutralization.

ATTACHMENT [illegible]

Moundsville North Works - pH Excursion Chronology

NPDES Permit Effective Date: January 17, 1975

Note: From 1/17/75 to 9/30/75 pH measured on Outfalls 001, 002, and 003 via 24-hour composite sample.

pH Excursion Report No.	Report Date	Excursion Date	Outfall Involved	Length of Excursion	Measured pH	Permitted pH	Outfall Flow	Cause of Excursion
9	3/20/75	3/15/75	001	24 hours	12.1	1.0-12.0		Not known.
		3/13/75	003	24 hours	0.8	1.0-12.0		Underneutralization.
		3/17/75	003	24 hours	0.7	1.0-12.0		Underneutralization.
		3/18/75	003	24 hours	0.6	1.0-12.0		Underneutralization.
		3/19/75	003	24 hours	0.9	1.0-12.0		Underneutralization.
10	4/2/75	3/28/75	003	24 hours	12.1	1.0-12.0		Overneutralization.
		3/29/75	003	24 hours	12.4	1.0-12.0		Overneutralization.
		3/31/75	003	24 hours	12.5	1.0-12.0		Overneutralization.
		4/1/75	003	24 hours	12.2	1.0-12.0		Overneutralization.
11	4/23/75	4/17/75	003	24 hours	12.3	1.0-12.0		Overneutralization.
		4/18/75	003	24 hours	12.1	1.0-12.0		Overneutralization.
		4/19/75	003	24 hours	12.3	1.0-12.0		Overneutralization.
		4/22/75	003	24 hours	12.2	1.0-12.0		Overneutralization.
	Note: From 10/1/75 to 9/1/76 pH measured by: Outfall 001 - 3 daily grab samples + (optional) 24-hr. comp. Outfall 002 - 3 daily grab samples + (optional) 24-hr. comp. Outfall 003 - Continuous recorder.							
12	10/7/75	10/3/75	001	1 hour(est.)	12.6	1.0-12.0		Ion-exchange regeneratio
13	11/25/75	11/20/75	003	15 min.	12.3	1.0-12.0		Ion-exchange regeneratio
14	12/5/75	11/29/75	002	8 hour(est.)	0.5	1.0-12.0		Sewer plugqage.
15	12/12/75	12/10/75	002	Unknown 24-hr.comp.	0.4*		10 GPM	SAC valve failure.
16	12/31/75	12/24/75	001	1 hour(est.)	12.25	1.0-12.0		Not known,
		12/25/75	002	4 hours(est.)	0.25	1.0-12.0		Not known.
17	2/3/76	1/28/76	001	8 hours(est.)	12.2	1.0-12.0		Alkaline process waste batch discharge.
		1/29/76	001	8 hours(est.)	12.1	1.0-12.0		Alkaline process waste batch discharge.
18	2/3/76	1/31/76	003	30 min.	0.8	1.0-12.0		Interruption to lime [illegible]

Moundsville North Works - pH Excursion Chronology

NPDES Permit Effective Date: January 17, 1975

Note: From 1/17/75 to 9/30/75 pH measured on Outfalls 001, 002, and 003 via 24-hour composite sample.

pH Excursion Report No.	Report Date	Excursion Date	Outfall Involved	Length of Excursion	Measured pH	Permitted pH	Outfall Flow	Cause of Excursion
19	2/9/76	2/3/76	003	10 min.	0.7	1.0-12.0		HCl rupture disc failure
20	2/13/76	1/18/76	001	8 hour(comp.)	12.1*	1.0-12.0		Batch-type alkaline waste discharges. Grab samples were OK on 3 of the 4 days. On 1/29/76 1 grab sample was high and was previously reported.
		1/24/76	001	8 hour(comp.)	12.1*	1.0-12.0		
				16. hour(comp.)	12.7*	1.0-12.0		
		1/27/76		16 hour(comp.)	12.6*	1.0-12.0		
				24 hour(comp.)	12.7*	1.0-12.0		
		1/29/76**	001	8 hour(comp.)	12.1*	1.0-12.0		
21	2/13/76	2/6/76	003	20 min.	0.8	1.0-12.0		Sewer pluggage during HCl regeneration of ion-exchange column.
		2/7/76	003	15 min.	0.8	1.0-12.0		
22	3/4/76	2/28/76	003	5 min.	0.9	1.0-12.0		Not known.
23	3/11/76	3/7/76	003	5 min.	12.1	1.0-12.0		Batch-type alkaline waste discharge.
		3/8/76	003	30 min.	12.2	1.0-12.0		Batch-type alkaline waste discharge.
24	3/15/76	3/10/76	001	15 min.(est.)	0.1	1.0-12.0		Sewer cross-connection.
25	3/16/76	3/10/76	003	35 min.	12.2	1.0-12.0		Ion-exchange system regeneration.
		3/11/76	003	10 min.	12.2	1.0-12.0		Ion-exchange system regeneration.
				15 min.	12.3	1.0-12.0		
26	4/15/76	4/12/76	003	5 min.	12.1	1.0-12.0		Ion-exchange system regeneration.

Notes: *Optional addition. monitor q.

**Same day as [illegible] grab sample excursion

Moundsville North Works - pH Excursion Chronology

NPDES Permit Effective Date: January 17, 1975

Note: From 1/17/75 to 9/30/75 pH measured on Outfalls 001, 002, and 003 via 24-hour composite sample.

pH Excursion Report No.	Report Date	Excursion Date	Outfall Involved	Length of Excursion	Measured pH	Permitted pH	Outfall Flow	Cause of Excursion
27	5/26/76	5/21/76	001	29 min.	12.3	1.0-12.0		Batch discharge of alkaline process wastes.
		5/24/76	001	39 min.	12.2	1.0-12.0		Batch discharge of alkaline process wastes.
28	6/28/76	6/20/76	002	16 hours(est.)	0.7 + 0.8	1.0-12.0		Process upset.
		6.22.76	001	8 hours(est.)	12.1	1.0-12.0		Process upset.
29	7/15/76	7/10/76	003	7 min.	0.9	1.0-12.0		Lime slurry pump pluggage
		7/11/76	003	10 min.	14.0	1.0-12.0		Excess neutralizing agent used
30	7/30/76	7/23/76	002	16 hours(est.)	0.1 + 0.3	1.0-12.0		Sulfuric acid line leak.

Note: On September 2, 1976, the pH limits for all 3 outfalls became 3.0-10.0 and Outfalls 001 & 002 sampling was reduced to one grab/day. 003 continued to be sampled and recorded continuously. On September 1, 1976, Outfall 001 flow was diverted to Outfall 003.

31	9/13/76	9/7/76	003	195 min.	2.0	3.0-10.0		Neutralization problems.
		9/8/76	003	70 min.	2.0	3.0-10.0		Neutralization problems.
32	9/16/76	9/10/76	003	35 min.	2.6	3.0-10.0		Lime slurry pump pluggage
33	9/24/76	9/19/76	002	1 hour(est.)	2.7	3.0-10.0		SAC leaks.
34	10/6/76	10/1/76	003	35 min.	2.2	3.0-10.0		Faulty valve replacement (nitric acid).
35	10/14/76	10/9/76	001	90 min.	2.9	3.0-10.0		Overflow (stormwater) thr bypass to Outfall 001.
		10/11/76	003	50 min.	11.0	3.0-10.0		Contractor pumped out accumulated alkaline wate
36	10/20/76	10/15/76	003	2 min.	10.2	3.0-10.0		Failure of automatic valve on pond discharge.
37	11/1/76	10/27/76	003	10 min.	10.4	3.0-10.0		Failure of automatic

Moundsville North Works - pH Excursion Chronology

NPDES Permit Effective Date: January 17, 1975

Note: From 1/17/75 to 9/30/75 pH measured on Outfalls 001, 002, and 003 via 24-hour composite sample.

pH Excursion Report No.	Report Date	Excursion Date	Outfall Involved	Length of Excursion	Measured pH	Permitted pH	Outfall Flow	Cause of Excursion
38	11/8/76	11/3/76	003	30 min. 25 min. 25 min.	2.7 2.2 2.3	3.0-10.0 3.0-10.0 3.0-10.0		Acid waters from drainage ditch.
39	12/3/76	11/24/76	003	45 min.	1.9	3.0-10.0		Blockage in acid sewer line.
		11/25/76	003	39 min. + 10 min.	2.6	3.0-10.0		Blockage in acid sewer line.
		11/25/76	001	75 min.	2.7	3.0-10.0		Blockage in Outfall 001 sewer system.
		11/27/76	003	100 min.	1.2	3.0-10.0		Blockage in acid sewer line.
				30 min.	2.0	3.0-10.0		Blockage in acid sewer line.
				285 min.	2.4	3.0-10.0		Acid waters from drainage ditch.
		11/28/76	003	20 min.	2.2	3.0-10.0		Residual acid in drainage ditch.
		11/29/76	003	195 min.	2.1	3.0-10.0		Lime pump failure.
		11/30/76	003	240 min. 370 min.	1.4	3.0-10.0		Lime pump failure.
		12/1/76	003	60 min.	2.4	3.0-10.0		Residual acid in drainage ditch.
40	12/9/76	12/4/76	002	24 hours(est.)	2.6	3.0-10.0		Process failure in Pomalusa plant.
41	12/17/76	12/13/76	001	270 min.(est.)	1.6	3.0-10.0	35 GPM	Damage to sewer line by construction work.
		12/14/76	001	150 min.(est.)	2.0	3.0-10.0	37 GPM	
42	12/20/76	12/14/76	001	5 min.	2.8	3.0-10.0		Malfunction of acid valve (HCl).
43	12/22/76	12/17/76	003	5 min.	2.7	3.0-10.0		Acid water from drainage ditch
44	12/27/76	12/21/76	001	50 min.(est.)	12.0	3.0-10.0	35 GPM	Short-term overflow to outfall 001 - cause

Moundsville North Works - pH Excursion Chronology

NPDES Permit Effective Date: January 17, 1975

Note: From 1/17/75 to 9/30/75 pH measured on Outfalls 001, 002, and 003 via 24-hour composite sample.

pH Excursion Report No.	Report Date	Excursion Date	Outfall Involved	Length of Excursion	Measured pH	Permitted pH	Outfall Flow	Cause of Excursion
45	1/3/77	12/28/76	003	40 min.	2.2	3.0-10.0		Process problems.
46	1/20/77	1/15/77	001	2 hours(est.)	12.7	3.0-10.0	50 GPM	Melting snow caused overflow to Outfall 001
		1/15/77	003	25 min.	11.0	3.0-10.0		Power failure caused control problem at 003 pH system.
				10 min.	10.8	3.0-10.0		
47	2/4/77	1/31/77	003	10 min.	2.8	3.0-10.0		HCl rupture disc failur
				5 min.	2.9	3.0-10.0		
				5 min.	10.8	3.0-10.0		Overneutralization.
48	2/25/77	2/21/77	001	175 min.	11.6	3.0-10.0	25-75 GPM	Sewer cleaning.
49	2/28/77	2/23/77	003	20 min.	10.8	3.0-10.0		Repairs to outlet pipe of pond.
50	3/25/77	3/20/77	002	3 hours	2.9.	3.0-10.0		Blocked sewer line.
51	4/7/77	4/3/77	003	2 min.	10.1	3.0-10.0		Heavy storm water flush of alkaline material.
				30 min.	2.8	3.0-10.0		Overneutralization with HCl.

Report Date	Excursion Date	Effluent Characteristic And Outfall	Discharge Permit Limitation	Length of Excursion	Measured Discharge Condition	Cause of Excursion
4/24/81	4/22/81	Suspended Solids 003	2500#/day max.	24 hours	2783#/day	Sampler error
2/20/80	2/17/80	pH 003	6.0-9.0	5 mins. 16 mins.	9.2 9.4	Over neutralization
2/21/79	2/16/79	Carbon Tetrachloride 003	20#/day max.	24 hours	43.8#/day	Circulation pump on carbon tetrachloride tank failed
11/13/79	11/8/79	BOD 003	1650#/day	24 hours	2145#/day	Blockage caused spillage into treatment proces:
10/12/78	10/9/78	BOD 003	1650#/day	24 hours	1935#/day	Unknown
9/7/78	9/2/78	pH 004	6.0-9.0	1 hour	2.0	Blocked line caused overflow into 004
7/19/78	7/12/78 7/13/78 7/14/78	Hexavalent Chromium 003	1.26#/day max.	7/11/78 to 7/13/78	1.63#/day 2.56#/day 1.49#/day	High pH in sewer prevented the reduction of Cr^{+6} to Cr^{+3}
5/11/78	5/9/78	Suspended Solids 003	2500#/day max	24 hours	3497#/day	Weather condition caused colids to flow into discharge

Report Date	Excursion Date	Effluent Characteristic And Outfall	Discharge Permit Limitation	Length of Excursion	Measured Discharge Condition	Cause of Excursion
2/23/78	2/29/78	pH 004	6.0-9.0	12 hours	10.4	Seal on caustic soda pump failed leaking into outfall 004
2/15/78	2/9/78	Untreated inorganic process effluent 004	N/A	8½ hours	N/A	Blocked sewer caused process waste to flow through 004 untreated; permit limitations were not violated
12/2/77	11/28/77	Color 003	APHA 300	--	APHA 350	Unknown
11/29/77	11/27/77	pH 003	6.0-9.0	80 mins.	2.0-5.9	Pluggage in neutralization system
10/28/77	10/16/77	BOD 003	1650#/day	24 hours	1792#/day	Blockage caused Pomalus acid plant spillage into treatment process
1/24/77	1/12/77	BOD 003	7200#/day	24 hours	7254#/day	Frozen lines upset process conditions and allowed excess material in effluent

Report Date	Excursion Date	Effluent Characteristic And Outfall	Discharge Permit Limitation	Length of Excursion	Measured Discharge Condition	Cause of Excursion
12/13/76	11/22/76 12/1/76	BOD 003	7200#/day	24 hours	15331#/day 7238#/day	Unknown
9/13/76	8/25/76 9/7/76	Hexavalent Chromium combined outfalls	16.8#/day	24 hours	23.9#/day 31.2#/day	Unknown
8/20/76	7/28/76	Hexavalent Chromium combined outfalls	16.8#/day	24 hours	18.8#/day	Blow down from cooling tower contained high solids
4/15/76	3/25/76	Hexavalent Chromium combined outfalls	16.8#/day	8 hours	22.1#/day	Level controller failure in cooling tower caused over flow to outfall

Initial non-compliance with pH limits resulted in issuance of EPA Administrative Order No. 74-466 on April 9, 1975. On May 2, 1975 Seller stated its responses to the USEPA Administrative Order No. 74-466. On May 20, 1975 USEPA sent Seller a letter indicating that the pH control improvements instituted by Seller satisfied the requirements of this order.

On April 29, 1977 Seller was notified that the EPA had requested legal action by the U.S. Attorney for the 104 pH excursions from the permit limits reported between January 17, 1975 and April, 1977. A negotiated settlement to this case culminated in issuance of a civil complaint on January 30, 1978, approval of a consent decree on March 17, 1978 and payment of a $75,000 fine by Seller.

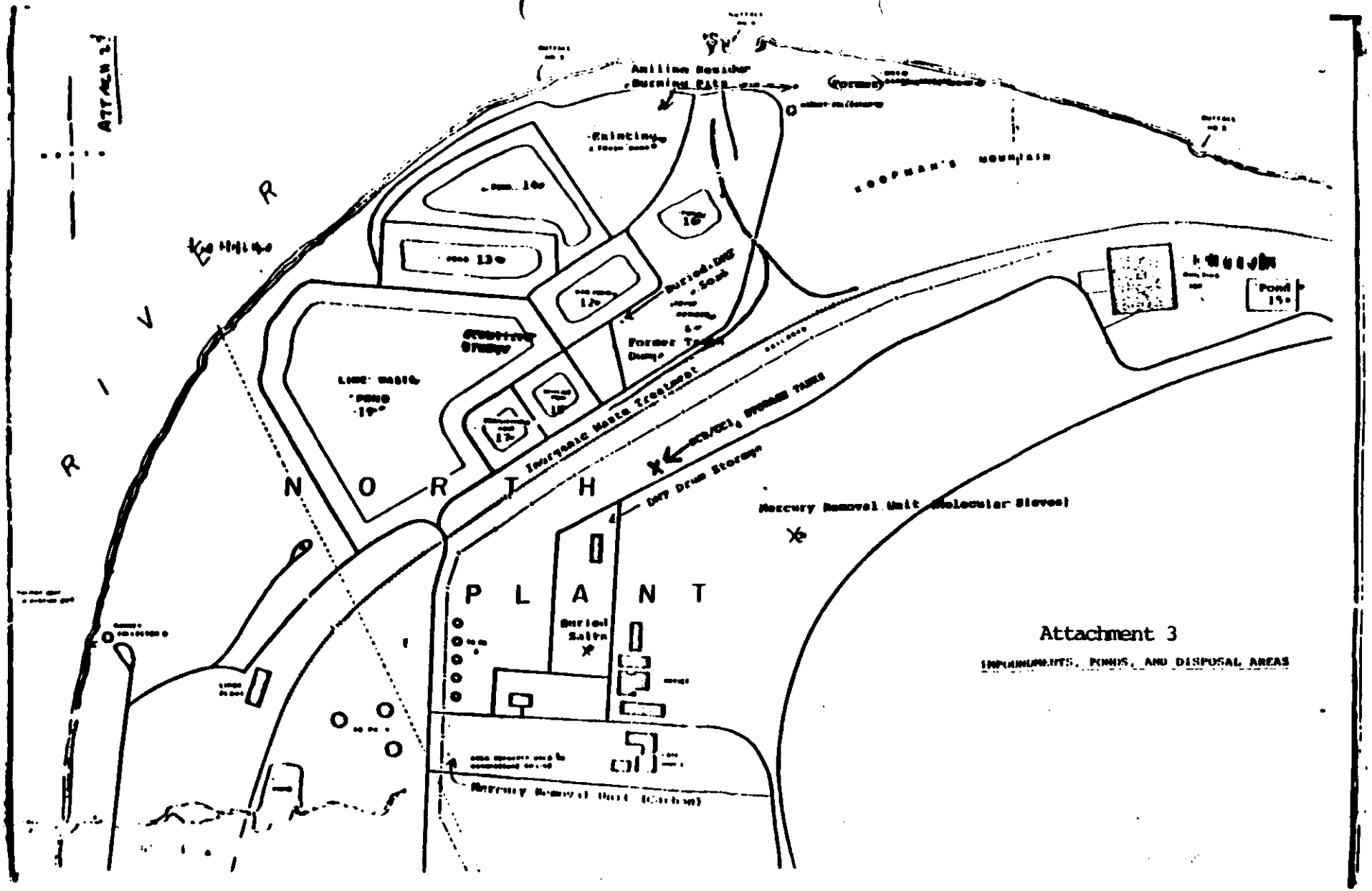
On the remaining excursions, no action has been taken by the EPA.

ATTACHMENT 2

DATE	DESCRIPTION OF INCIDENT	AGENCY NOTIFIED	STATUS
1/8/75	Approximately 50,000 lbs. maleic anhydride discharged to the Ohio River as a result of broken line. There was no significant effect on the river quality.	USEPA and WRD 1/17/75	No federal action; WRD issued an order and a warrant for the arrest of Seller's plant manager. The complaint was dismissed at magistrate's court hearing and a response to the order was submitted to WRD on 2/26/75.
6/8/76	Approximately 0.3 lbs. of TDA overflowed from a tank car to the Ohio River.	USCG, USEPA and WRD 6/8/76	No federal or state action.
5/2/78	Approximately 800 lbs. of TDA discharged to the inorganic waste treatment system caused an undetected amount of TDA to enter the Ohio River.	USEPA and WRD 5/11/78	No federal or state action.
1/29-2/4/78	Approximately 1,500 lbs. aniline were discharged to the Ohio River as a result of an accidental release in a process building.	WRD and USEPA 2/8/78	No federal action; WRD issued Notice to Comply on 2/8/78, Seller submitted compliance schedule that was implemented and approved by WRD.
1/19/79	Fire in the TDA process area caused TDA to flow to the inorganic treatment plant, bypassing organic treatment, however, no TDA was observed in the outfall.	WRD and USEPA 1/24/79	No federal or state action.
2/12/79	Approximately 296 lbs. of TDA were discharged to the Ohio River via steam traps outside of curbing in TDA process area.	WRD - 2/16/79	No state action.

ABNORMAL EFFLUENT DISCHARGES

ATTACHMENT 3



Attachment 3

IMPOUNDMENTS, PONDS, AND DISPOSAL AREAS

EXHIBIT 3

ENFORCEMENT CONFIDENTIAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: Summary of CERCLA § 104e Responses
Hanlin-Allied Site

DATE: 6-17-94

FROM: Joan Armstrong, Civil Investigator
PRP Search Section (3HW11)

TO: File

Below is a summary of the CERCLA § 104(e) responses received from Olin Corporation, Ohio Valley Industrial & Business Development Corporation, Union Carbide Corporation, and AlliedSignal regarding the Hanlin-Allied Site.

Olin Corporation: On June 6, 1994, Olin Corporation ("Olin") submitted an interim response to EPA's May 11, 1994, CERCLA § 104(e) letter. Olin answered questions 1 through 4 and advised they would respond to questions 5 through 10 by June 24, 1994. Olin advised that it purchased a portion of the Site from Allied on October 26, 1981 (deed is dated October 22, 1981). Olin currently owns this portion of the Site, however they ceased operations. Olin operated a chemical manufacturing plant from October 26, 1981 to December 31, 1984. The operations included manufacturing toluene diisocyanate, hydrochloric acid (as a by-product of TDI) miscellaneous TDI products and methylene dianiline. Olin also manufactured the following three materials, primarily for the use in the manufacture of TDI: dinitrotoluene, toluene diamine, and phosgene. In 1987 Olin sold a parcel of land to Hanlin which contained three 500,000 gallon tanks. Olin advised that at the time of the purchase of the property from Allied, Allied operated a TDI production facility which was comprised of the following operations: dinitrotoluene, toluene diisocyanate ("TDI"), phosgene, hydrochloric acid, methylene dianiline, and also blended TDI with miscellaneous polyols.

Ohio Valley Industrial and Business Development Corporation: On June 10, 1994, Ohio Valley Industrial and Business Development Corporation ("OVIBDC") responded to EPA's May 11, 1994, CERCLA § 104(e) letter. OVIBDC advised that it never owned or operated any portion of the Site. OVIBDC advised that Ohio Valley Industrial Corporation ("OVIC"), to whom EPA's letter was addressed, was dissolved in 1960. OVIBDC denies it is a successor to OVIC. Shortly after it dissolved, OVIC transferred its corporate minutes to OVIBDC for informational purposes only. From the corporate minutes, OVIBDC advised that it appears OVIC

purchased farmland from various individuals in 1947-1948. In 1952, the land was sold to Allied. According to OVIBDC, no industrial operations occurred on this land prior to Allied. OVIBDC attached its articles of incorporation and various corporate minutes from OVIC.

Union Carbide Corporation: On May 18, 1994, Union Carbide Corporation ("UCC") responded to EPA's April 26, 1994, CERCLA § 104(e) letter. UCC advised that it purchased 11 acres in 1955 from Allied Chemical & Dye Corporation (now AlliedSignal) in order to build an acetylene manufacturing plant on the property. According to UCC, the purpose of this operation was to provide acetylene and lime slurry to Allied, via pipelines. Allied owned and operated an adjacent plant which used the acetylene to manufacture vinyl chloride. UCC provided a copy of an Agreement dated April 1, 1960 between UCC, by its Division Union Carbide Olefins Company, and Allied Chemical Corporation, by its Solvay Process Division, (this agreement references two earlier agreements in 1955 and 1957, however UCC could not locate these documents). The Agreement states that UCC is to provide Allied acetylene (75,000,000 cubic feet per month). The Agreement also specifies that UCC was "to deliver to Solvay's [Allied's] lime slurry pipeline leading to Solvay's [Allied's] sludge basins adjacent to the Acetylene Plant . . ." Further, the Agreement states that when UCC has produced "said quantity of acetylene in a given calendar year, UCC will either remove from the premises all additional lime slurry resulting from the manufacturing of acetylene or deliver it to Solvay's [Allied's] sludge basin, but if UCC elects to deliver it to the sludge basin it shall upon such delivery become Sovay's [Allied's] property and UCC shall not thereafter assert any claim therefor." UCC also provided copies of various correspondence between Allied and UCC negotiating such Agreement.

According to UCC it used calcium carbide (which came from a former UCC plant in Ohio) and water to generate acetylene and calcium hydroxide (lime slurry). UCC provided current MSDSs for acetylene and calcium hydroxide, however, UCC stated that this information may be of limited value since the substances identified in the MSDSs concerns acetylene in cylinders, and the acetylene provided to Allied was delivered by pipeline.

UCC has been unable to locate any documents regarding by-products or waste produced by UCC's operations. UCC stated that both acetylene and lime slurry were products and calcium hydroxide was a co-product. According to the former plant manager Irus P. Main, to the best of his recollection, UCC never spilled or caused a release of any chemicals, hazardous substances or hazardous wastes on Site.

UCC ceased operations on October 6, 1967 because Allied canceled the contract for UCC to provide acetylene to Allied. On March 8, 1968, title and easement interests were conveyed back to Allied (this was a clause in the Agreement that Allied would have

first option at buying back the facility).

AlliedSignal (formerly known as Allied Chemical & Dye Corporation and Allied Chemical Corporation): By letter dated June 10, 1994, (received June 15, 1994), AlliedSignal ("Allied") responded to EPA's May 11, 1994, CERCLA § 104(e) letter. According to Allied it acquired the land comprising of the Site in 1952 from various individuals. The Site was farmland prior to Allied purchasing it. Allied's operations included:

December 12, 1953: Chlorine/caustic soda installation produced by electrolysis of a saturated salt solution in a mercury cell (the salt came from brine wells on Site, 6,500 feet deep).

Mid 1954: Chloromethane, natural gas was reacted with chlorine to produce: methyl chloride, methylene chloride, chloroform, and carbon tetrachloride along with by-product hydrogen chloride.

1956: Vinyl Chloride plant was added to consume by-product, acid. The vinyl chloride was produced by reacting hydrogen chloride and acetylene. Acetylene was produced "on site and purchased from Union Carbide." In 1967 the Vinyl Chloride plant was shut down and the acid was then reacted with methanol to produce methyl chloride.

Allied used the following substances in its operations:

acetylene*, mercury, methane*, methanol*, potassium carbonate, propylene oxide, salt*, sodium carbonate, sulfuric acid zinc chloride. (* = raw material)

The following is a list of products produced by Allied:

carbon tetrachloride, chlorine, chloroform, hydrochloric acid, hydrogen, methyl chloride, methylene chloride, sodium hydroxide, vinyl chloride.

According to Allied's response it cannot locate any information responsive to questions number 6 and 7 in EPA's CERCLA § 104(e) letter (which asked for the identity of all by-products and wastes and methods used by Allied to dispose of or treat such by-products and waste).

Allied provided documents regarding 12 spill/releases to water/land and provided information regarding 3 releases to air.

The following is a brief summary of the spill/releases:

10/29/76: Sodium chloride brine/mercury discharge: a fiberglass reinforced polyester tank ruptured and 27,000 gallons of saturated sodium chloride brine emptied into a curbed containment area. Approx. 5,000 gallons spilled over the

containment area and discharged to the Ohio River at Outfall 001. (Content of mercury in brine 5.70 ppm).

02/18/77: 55 gallons of Mobile DTE medium lubricating oil were discharged to the Ohio River at Outfall 001 when an employee was lifting a 55 gallon drum with a chain hoist and it fell and ruptured. Oil entered the floor drain.

03/04/77: 15,000 gallons of sodium chloride brine (containing .086 mercury) was discharged to Ohio River at Outfall 001 when a defective valve on a tank was being replaced and brine spilled over the roof into the floor drain.

03/25/77: A power failure in the chloromethane production area resulted in the loss of the reflux pump. A drum which accumulated condensed carbon tetrachloride failed and overflowed. Some liquid founds it way to the plant's storm sewer system. Allied estimated 40 gallons released to Outfall 001.

03/28/77: A grab sample at Outfall 001 showed higher level than normal of carbon tetrachloride. The source was located which was a leaking mechanical seal on a process pump, which pumped bottoms from chloroform distillation unit. Outfall grab samples continued to show elevated levels of carbon tetrachloride, and Allied continued its search for a source and found a leaking tube in the carbon tetrachloride vent condenser. The leak resulted in small quantities of carbon tetrachloride entering Outfall 001.

04/02/77: A grab sample at Outfall 001 showed higher than normal levels of carbon tetrachloride. The source was not definitely verified, however Allied believed it to be from a reflux drum overflowing. Allied estimated approximately 26 gallons entered the Ohio River.

07/24/77: A 100,000 gallon steel tank containing saturated 25% sodium chloride brine, ruptured. 64,000 gallons were discharged to the Ohio River via Outfall 001.

11/09/77: 2,800 lbs. of chloride entered the Ohio River by Allied's barge loading dock which was caused from a break in the 6" line from Allied's brine well.

04/01/78: 50 gallons of No. 2 fuel oil was discharged to the Ohio River when a sight gauge on the fuel oil tank was blown down by high winds. Approximately 150 gallons entered plant sewer system, and 50 gallons entered Outfall 001.

12/01/78: 1,000 gallons of sodium chloride brine was discharged to Outfall 001 when a polyethylene line failed during the transfer of waste brine solution from the brine saturation process to the mercury treatment facilities (sample: .05 mercury, 109,900 lbs. chloride).

08/08/79: 24,000 gallons of 25% sodium chloride brine solution was discharged to the Ohio River when a 4" steel riser failed. This riser lead from the production brine wells to the pump house facility. Approx. 36,000 lbs. of chloride discharged to the Ohio River (Allied was permitted to discharge 171,659 lbs.).

09/18/79: 4,600 gallons of 255 sodium chloride brine was discharged to the Ohio River via Outfall 001 which was caused by an operator error. During a routine brine filter back wash, a valve was left open and 40,000 gallons drained from storage. The solution was discharged to a confined area, but approx. 4,600 gallons spilled over the containment area.

The 3 releases of chlorine to the air occurred 04/20/74, 06/02/78, and 051679.

Allied did not provide any answers to questions 9 and 10 dealing with environmental assessments/investigations and sampling activities.

A separate memo will be provided to summarize Olin's supplemental response.

cc: C. Valente (3RC33)
D. Iacono (3HW41)
C. Wagner (3HW33)